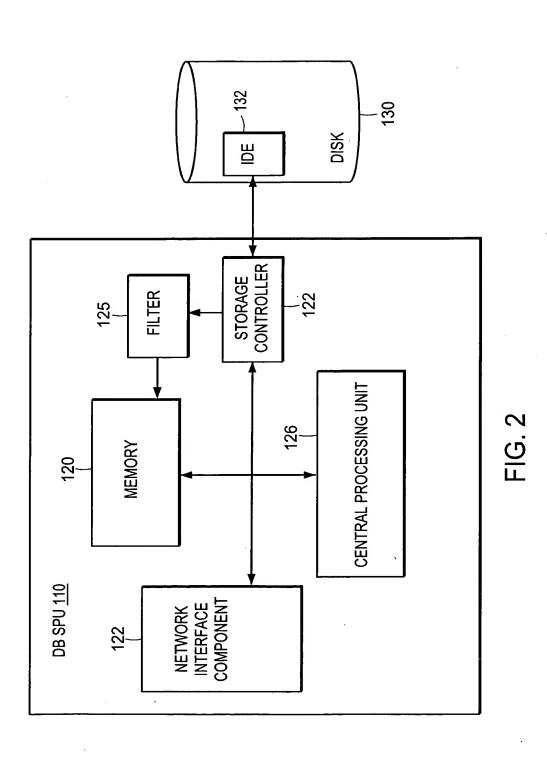
Docket No.: 3336.1017-001 Controlling Visibility in Multi-Version.. Title: Foster D. Hinshaw, et al. Inventors: Replacement Sheet 1/19 DB SPU DB_SPU RESOURCE USAGE MANAGER **USAGE MANAGER** 119 RESOURCE ORDER RELATIONS CALLS TO ACQUIRE CALLS TO ASSERT ORDER RELATIONS CALLS TO ACQUIRE CALLS TO ASSERT RESOURCES RESOURCES **TRANSACTION** QUERY EXECUTION **TRANSACTION** QUERY EXECUTION MANAGER MANAGER MANAGER MANAGER 113 113 SENDS NEW ORDER RELATIONS SENDS NEW ORDER RELATIONS ORDER RELATIONS SENDS NEW ORDER RELATIONS SENDS NEW SENDS A QUERY SNIPPET FIG. 1 TRANSACTION MANAGER SERIALIZATION CHECKS FOR SERIALIZATION RANSACTION CHECKS FOR EXECUTION MANAGER EXECUTION MANAGER MANAGER QUERY CYCLES QUERY 101 101 SENDS NEW ORDER RELATIONS 103 **ORDER RELATIONS** CALLS TO ACQUIRE ORDER RELATIONS CALLS TO ACQUIRE CALLS TO ASSERT CALLS TO ASSERT RESOURCES RESOURCES **USAGE MANAGER USAGE MANAGER** RESOURCE RESOURCE DB-HOST DB-HOST 100 102 100

Title: Controlling Visibility in Multi-Version.. Foster D. Hinshaw, *et al.* Inventors:

2/19

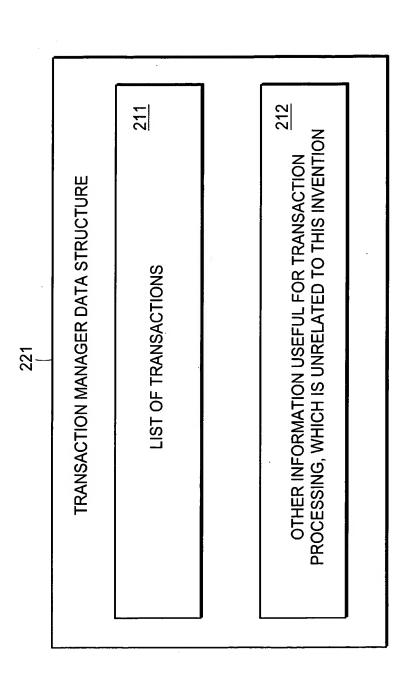


Docket No.: Title: 3336.1017-001

Controlling Visibility in Multi-Version..

Inventors: Foster D. Hinshaw, et al.

Replacement Sheet

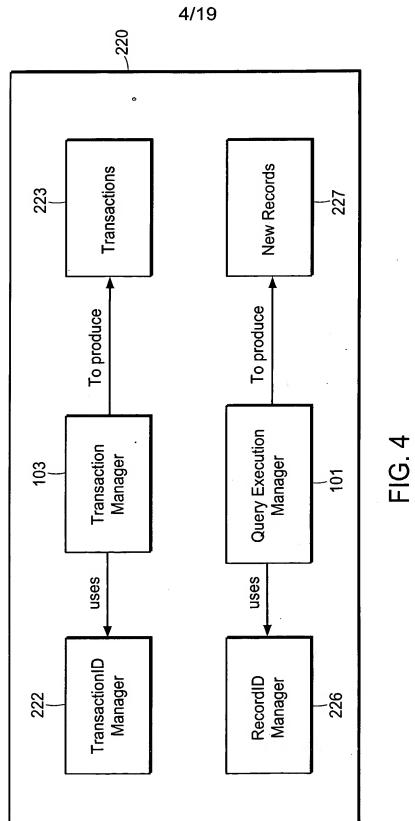


3336.1017-001

Title:

Controlling Visibility in Multi-Version.. Foster D. Hinshaw, et al.

Inventors:



Foster D. Hinshaw, et al. Inventors: Replacement Sheet 5/19 200 TRANSACTION DATA STRUCTURE - 201 TID STATE INFORMATION: INCLUDING WHETHER THE - 202 TRANSATION IS ACTIVE, COMMITTED OR ABORTED INVISIBILITY LIST -204 NUMBER OF TIDS IN THIS LIST -203 -205 NUMBER OF TIDS TREATED AS INVISIBLE 206 **VECTOR OF TIDs** TRANSACTION START TIME 207 - 208 TRANSACTION END TIME LOW WATER MARKS -209 - 210 **HIGH WATER MARKS** OTHER INFORMATION USEFUL FOR

Controlling Visibility in Multi-Version..

Docket No.: 3336.1017-001

Title:

FIG. 5

TRANSACTION PROCESSING, WHICH IS UNRELATED TO THIS INVENTION

- 211

Docket No.: Title:

3336.1017-001

Inventors:

Controlling Visibility in Multi-Version..

Foster D. Hinshaw, et al. Replacement Sheet

6/19

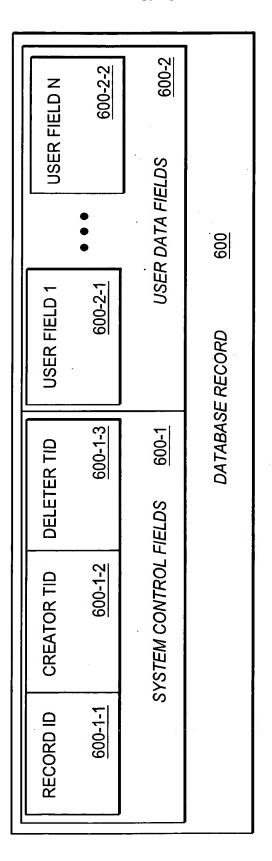


FIG. 6

Title:

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Inventors:

7/19

	110-1-5	-	110-2-6	2	110-3-6
100		40		85	
LISA	110-1-5	HENRI	110-2-5	MADHU	110-3-5
SMITH	110-1-4	LEROQ	110-2-4	REDDI	110-3-4
0	110-1-3	0	110-2-3	0	110-3-3
1234	110-1-2	1234	110-2-2	1234	110-3-2
	110-1-1	2	110-2-1	က	110-3-1

Docket No.: 3336.1017-001
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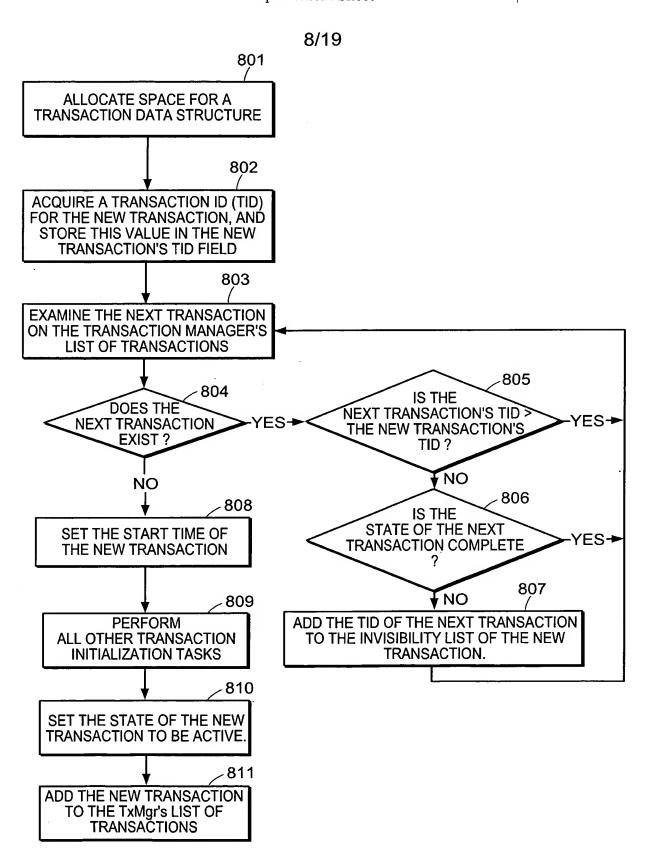


FIG. 8

3336.1017-001 Title:

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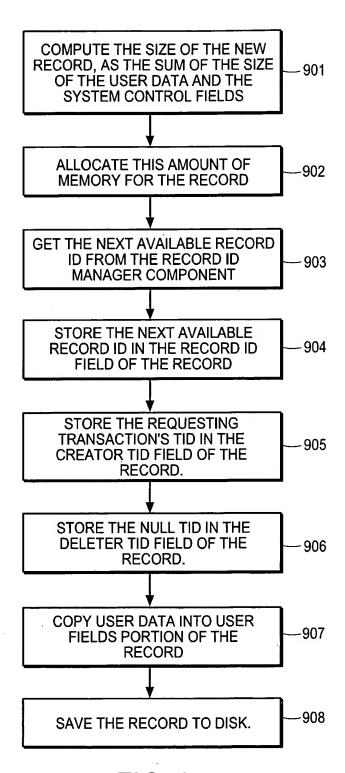


FIG. 9

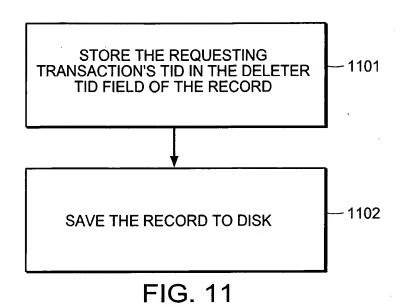
Title: Inventors: 3336.1017-001 Controlling Visibility in Multi-Version.. Foster D. Hinshaw, *et al.* Replacement Sheet

_	1234	0	SMITH	LISA	100
110-1-1	110-1-2	110-1-3	110-1-4	110-1-5	110-1-5
5	1234	2000	LEROQ	HENRI	40
110-2-1	110-2-2	110-2-3	110-2-4	110-2-5	110-2-6
င	1234	0009	REDDI	MADHU	85
110-3-1	110-3-2	110-3-3	110-3-4	110-3-5	110-3-6
4	4000	0	KASILOVA	VIKA	95
110-4-1	110-4-2	110-4-3	110-4-4	110-4-5	110-4-6
2	2000	0	LEROQ	HENRI	75
110-5-1	110-5-2	110-5-3	110-5-4	110-5-5	110-5-6

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11/19



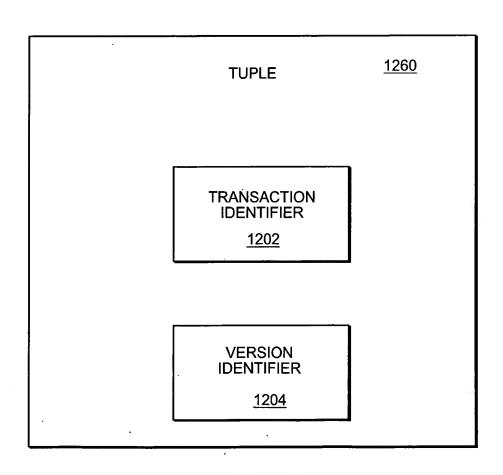


FIG. 12

Title: Cor

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Inventors: Foster D. Hinshaw, et al.

12/19

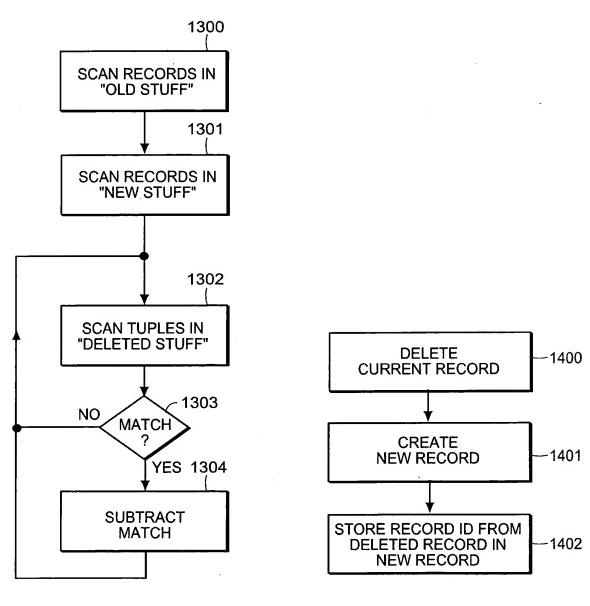


FIG. 13

FIG. 14

Title: Controlling Visibility in Multi-Version..

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Replacement Sheet

13/19

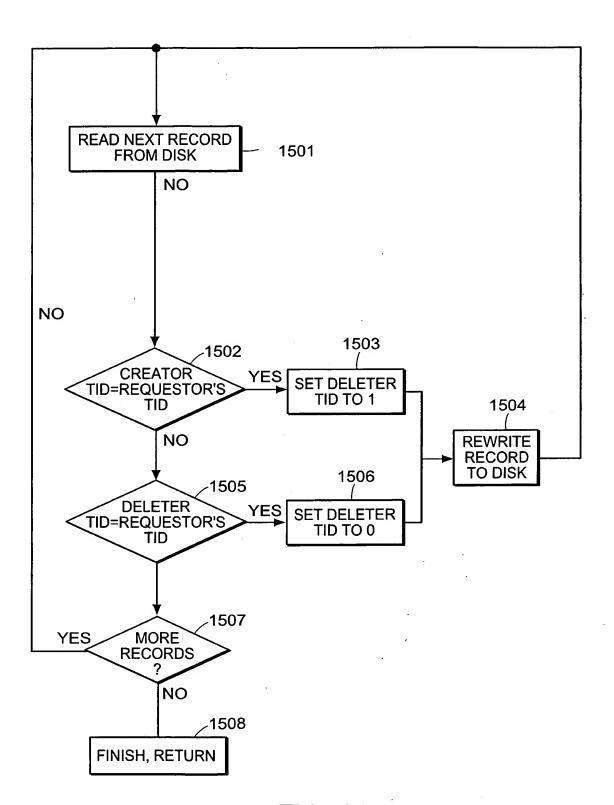
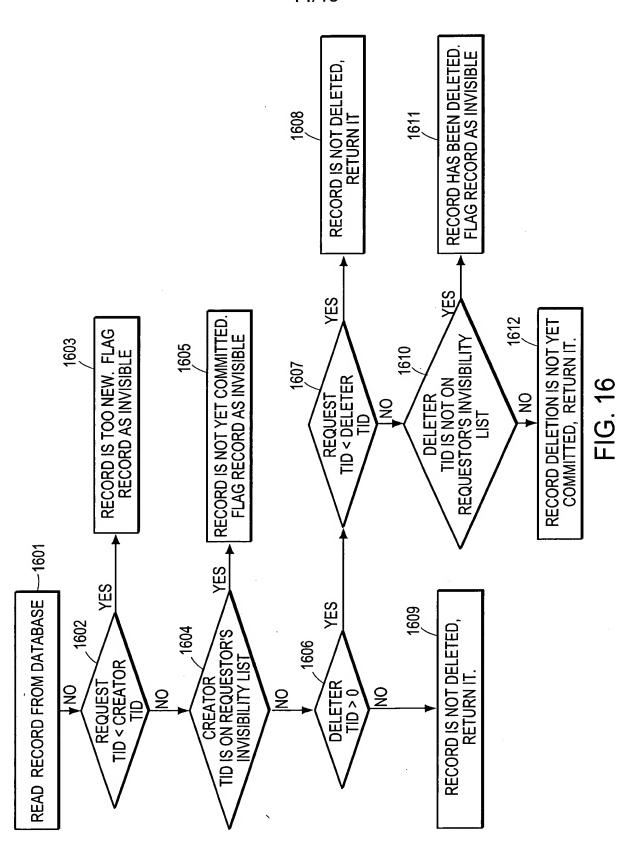


FIG. 15

Title: Controlling Visibility in Multi-Version..

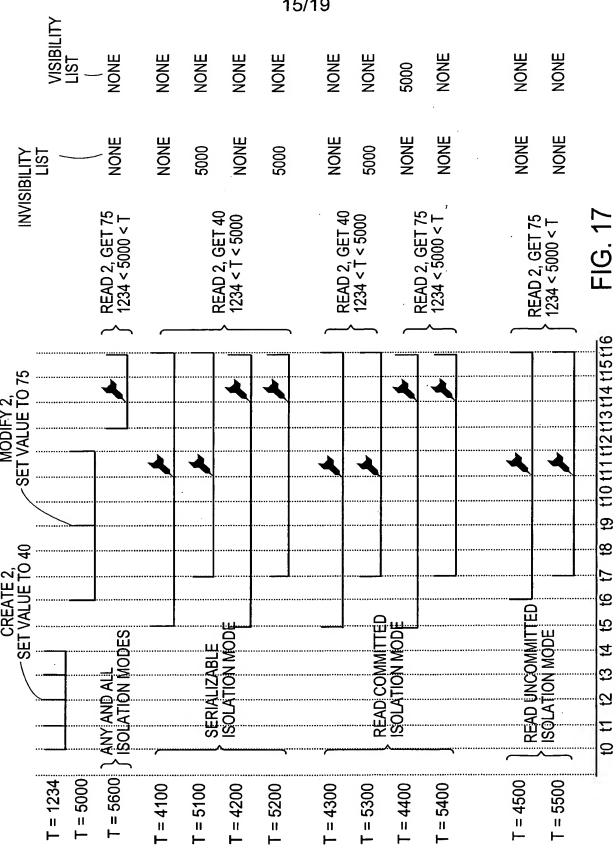
Inventors: Foster D. Hinshaw, *et al.*Replacement Sheet

14/19



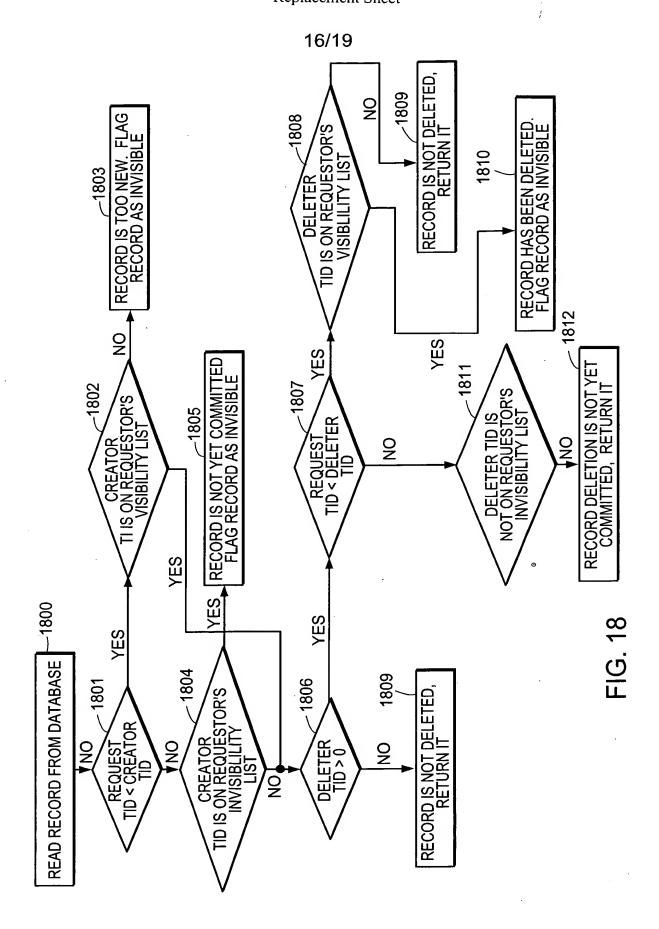
Title: Controlling Visibility in Multi-Version.. Inventors: Foster D. Hinshaw, et al.





Title: Controlling Visibility in Multi-Version..

Inventors: Foster D. Hinshaw, et al.
Replacement Sheet

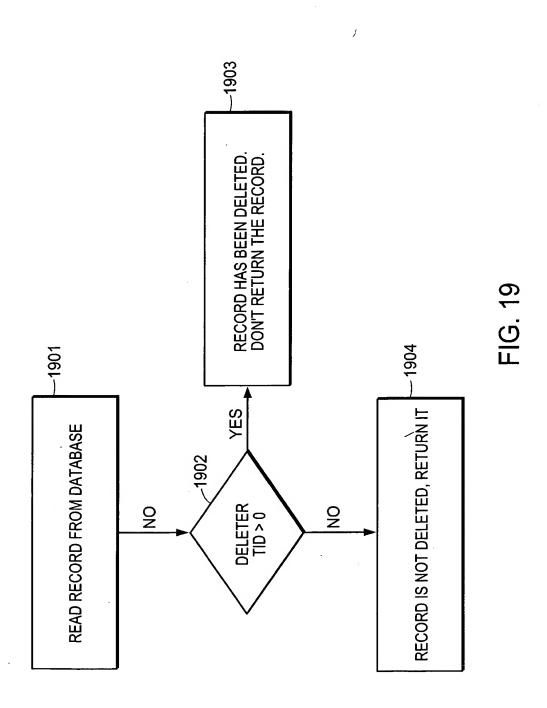


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Inventors: Foster D. Hinshaw, et al.
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17/19



3336.1017-001

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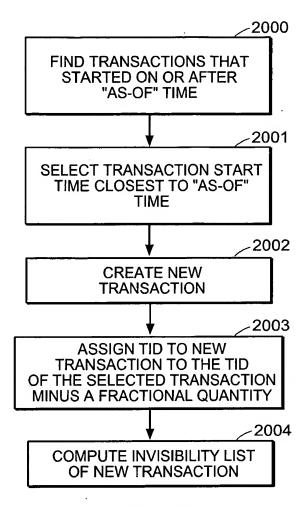


FIG. 20

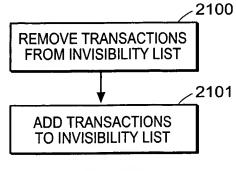


FIG. 21

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19/19

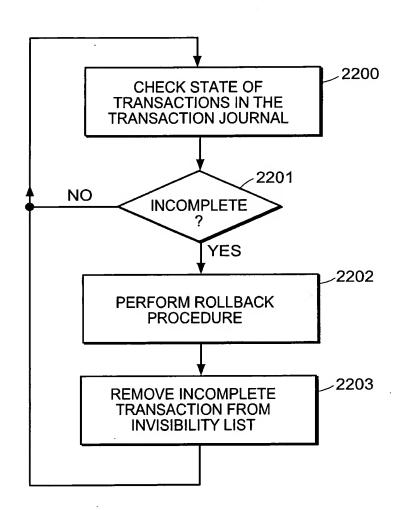


FIG. 22